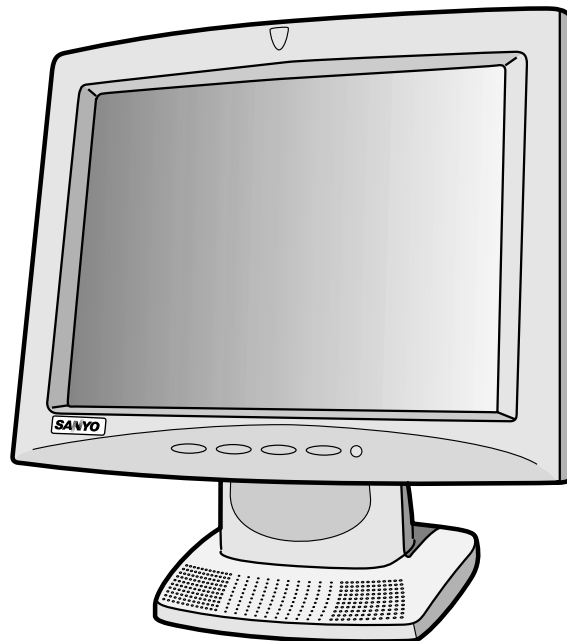


SERVICE MANUAL

15" COLOR LCD MONITOR

LMU-TF150A2
(GENERAL)

PRODUCT CODE NO.	
LMU-TF150A2	1 938 102 10



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Refer to the separate volume user's guide for instruction.

PRECAUTIONS

Placement precautions

- | Avoid placing the unit in humid or dusty places, or where it will be exposed to excessive heat (direct sunlight, heaters, etc.)
- | Do not step on or set anything on the AC cord. **DAMAGE TO THE AC CORD IS A SAFETY RISK AND CAN CAUSE A FIRE.**
- | Install the unit only on a stable and smooth surface.
- | Do not connect the unit to the same AC outlet with appliances that generate large amounts of interference (such as heaters with thermostats, appliances with motors, etc.). It is best to use a completely separate electrical outlet.
- | Keep the unit away from water. If water accidentally enters the unit, unplug the AC power cord immediately. **DO NOT PLUG IN THE UNIT AGAIN.**

Handling precautions

- | Avoid bending, kinking or damaging the AC power cord.
- | Never insert or remove the power cord with wet hands. Also, be sure to hold cord by the plug when removing it from the outlet.
- | Do not remove any parts that are held in place with screws. (The unit does not contain any user serviceable items.)
- | Maintain standard room temperature (5°C to 35°C, or 41°F to 95 °F) during use. Do not subject the unit to shock or vibration. Do not move the unit while it is in use.
- | A rapid increase in room temperature in cool weather can cause condensation to form inside the unit. If this occurs, wait at least 15 minutes after turning the unit on before attempting to operate it.

1. MAIN SPECIFICATION

LCD	Panel Type	TFT
	Screen Size	15.0"
	Pixel Pitch	0.2970 X 0.2970 mm
	Pixel Format	1,024 X 768
	Effective Viewing Area	304.1 X 228.1 mm
	Brightness	200 cd/m ²
	Response Time	40 ms
	Contrast	350 : 1
	Viewing Angle	Up:55, Down:65, Right:70, Left:70 deg. (Contrast Ratio:5)
	Color	16.77 million
Back Light	Type	CCFL
	No.	2 pcs
Synchronization Frequencies	Horizontal	24.8 - 60.2 kHz
	Vertical	60.0 - 75.0 Hz
Input Signal	System	Analog RGB, Video 0.7Vp-p
	Input Impedance	75 ohm
	Sync. Type/Level	Separate TTL (+/-)
Audio	Line in	Stereo (Mini Jack X 1)
	Headphone	Stereo (Mini Jack X 1)
	Speaker	Stereo (0.2W X 2)
Video		15PIN MINI D-SUB
External Control	Switch/Volume	Brightness, Power Switch, Audio Volume
	On-Screen Display	Auto Adjust, Contrast, Horizontal Size, Focus, Horizontal Position, Vertical Position, Color, Recall, Black level
		Language :English, German, French, Spanish
Environment	Temperature	Operating : 5 to 35deg. Storage : -20 to 60deg.
	Humidity	30 - 85% RH (Non Condensing)
Power Supply (AC Adapter)		Input : AC 115 - 240V Output : DC12V
	Model Name	GI40-US1225
Power Consumption		30W (Standby : 5W max.)
Physical	Dimensions (WXHXD)	399 X 412 X 199 mm
	Weight	4.5kg
Power Management		VESA DPMS
USB HUB		USB standard Rev. 1.1
		Self-Powered/Bus Powered
		Upstream X 1, Downstream X 3
Tilt/Swivel		Up 20 deg., Down 0 deg., / Swivel Function
Plug & Play		DDC1, DDC2B (VESA Standard)
Other Features		Auto Display Adjustment, Digital Smoothing Full Screen Expansion
Accessories		AC Adapter & Cord, RGB Cable, Audio Cable, USB Cable

2. TROUBLESHOOTING

Check the following for troubles of LCD monitor.

No.	Symptom		Check Points	Treatments	Class
1	No Picture with Power Indicator OFF	1	Is the Power "ON" to a LCD Monitor ?	Check AC outlet, AC cord, DC Jack and Power switch for a LCD monitor	A
		2	Is an AC Adapter defective?	Replace an AC Adapter with the new one	B
		3	Is the wire harness between main PCB and DC IN PCB secured firmly ?	Check the connection	B
		4	Is the Power Supply circuit on main PCB defective ?	Replace the main PCB with the new one	B
2	No Picture with Power Indicator in Amber	1	Is the Power "ON" to a Computer ?	Check the Power Supply for a Computer	A
		2	Is a computer standing by ?	Be out of standing by condition, by operating to a computer	A
		3	Is the Image Processing circuit on main PCB defective ?	Replace the main PCB with the new one	B
3	No Picture with Power Indicator in Green	1	Is a screen saver programming running ?	Press any key or touch the mouse, to end the screen saver program	A
		2	Is a signal cable connected securely ?	Check the connection of a signal cable	A
		3	Disconnected a signal cable ? or Bent a terminal pin ?	Replace a signal cable with the new one	C
		4	Is the computer's signal timing not agreeable to the LCD's specification ?	Adjust the computer's signal timing, if possible	A
		5	Is the wire harness between Inverter PCB and a LCD module secured firmly ?	Check the connection of wire harness	B
		6	Is the wire harness between main PCB and Inverter PCB secured firmly ?	Check the connection of wire harness	B
		7	Is the wire harness between main PCB and SW/LED PCB or main PCB and Brightness control volume connected securely ?	Ensure the connection of a wire harness	B
		8	Is the Brightness control volume defective ?	Replace the Volume PCB with new one, and check the screen	B
		9	Is the LCD module defective ?	Replace a LCD module with the new one	B
		10	Is the Inverter unit defective ?	Replace an Inverter unit with the new one	B
		11	Is the display circuit on main PCB defective ?	Replace the main PCB with the new one	B
4	No Picture with Power Indicator blinking in Green	1	Is a computer standing by ?	Be out of standing by condition, by operating to a computer	A
		2	Is a signal cable connected securely ?	Check the connection of a signal cable	A
		3	Disconnected a signal cable ? or Bent a terminal pin ?	Replace a signal cable with the new one	C

No.	Symptom		Check Points	Treatments	Class
5	White/Grey on whole screen(Nothing on screen)	1	Is the wire harness between main PCB and LCD module secured firmly ?	Check the connection of wire harness	B
		2	Is the LCD module defective ?	Replace a LCD module with the new one	B
		3	Is the main PCB defective ?	Replace the main PCB with the new one	B
6	Dark screen	1	Is the wire harness between inverter and a LCD module secured firmly ?	Ensure the connection of a wire harness	B
		2	Is the wire harness between one of inverters and main PCB secured firmly ?	Ensure the connection of a wire harness	B
		3	Is the display circuit on main PCB defective ?	Replace the main PCB with the new one	B
7	Screen's display range is incorrect	1	Is the adjustment for screen performed correctly ?	Adjust the screen correctly	A
		2	Is the output level on image from a computer not agreeable to LCD's specification ?	Check the specification of a computer	C
		3	Is the size of screen set correctly ?	Set the size of screen again(refer to User's Manual for computer)	A
8	Screen is distorted	1	Is the adjustment for screen performed correctly ?	Adjust the screen correctly	A
		2	Is a signal cable connected securely ?	Check the connection of a signal cable	A
		3	Is a sigil cable extended ?	Don't extend a signal cable	A
		4	Is the output level on image from a computer not agreeable to LCD's specification ?	Check the specification of a computer	C
		5	Is the Image Processing circuit on main PCB defective ?	Replace the main PCB with the new one	B
9	Part of colors(R/G/B) is not displayed. Black line appears in vertically	1	Is a signal cable connected securely ?	Check the connection of a signal cable	A
		2	Is the connection between main PCB and a LCD module securely ?	Check the connector	B
		3	Is the Image Processing circuit on main PCB defective ?	Replace the main PCB with the new one	B
10	No sound	1	Is the audio cable connected securely ?	Ensure the connection of the audio cable	A
		2	Is the position of audio volume at the minimum position ?	Set the audio volume at the appropriate position	A
		3	Is the volume setting for an audio equipment adequately ?	Refer to the user's manual for an audio equipment	A
		4	Is the wire harness between main PCB and Audio PCB securely ?	Ensure the connection of a wire harness	B
		5	Is the wire harness between Audio PCB and Volume PCB securely ?	Ensure the connection of a wire harness	B

No.	Symptom		Check Points	Treatments	Class
10	No sound	6	Is the wire harness between Audio PCB and DC IN PCB securely ?	Ensure the connection of a wire harness	B
		7	Is the wire harness to speakers securely ?	Ensure the connection of a wire harness	B
		8	Is the Audio PCB defective ?	Replace the Volume PCB with new one, and check the screen	B
11	USB devise does not work(a PC does not detect an USB Hub)	1	Is a LCD monitor connected to an USB devise securely with USB cable ?	Ensure the connection of the USB cable	A
		2	Upon a timing, a PC does not detects an USB Hub	Reinstall the USB cable	A
		3	Upon a PC's OS or version, a PC cannot control USB devise	Refer to the user's manual for a PC and OS. Ensure a PC supports USB	A
		4	Is the wire harness between main PCB or DC IN PCB and USB PCB secured firmly ?	Ensure the connection of a wire harness	B
		5	Is the wire harness between USB PCB and a relay PCB for USB secured firmly ?	Ensure the connection of a wire harness	B
		6	Is the USB PCB defective ?	Replace the USB PCB with new one	B
12	USB devise does not work(a PC does not detect an USB devise)	1	Is a LCD monitor connected to an USB devise securely with USB cable ?	Ensure the connection of the USB cable	A
		2	Upon a timing, a PC does not detects an USB devise	Reinstall the USB cable	A
		3	Is the driver software for a USB devise loaded correctly ?	Refer to the user's manual for an USB devise. Reload it to a PC.	A
		4	Is the USB PCB defective ?	Replace the USB PCB with new one	B
13	A connected USB devise in self-powered does not work	1	Is the USB devise in self-powered connected with a LCD Monitor AC is not providing ?	Provide AC power to a LCD Monitor. Check Warning is not displayed. Refer to the User's manual for an USB devise, connect an AC Adapter to a LCD	A
		2	Is the connection between the USB PCB and DC IN PCB secured firmly ?	Ensure the connection	B
		3	Is the USB PCB defective ?	Replace the USB PCB with the new one	B

A It is possible to treated by end-user

B It might be possible to treat by end-user in some case.

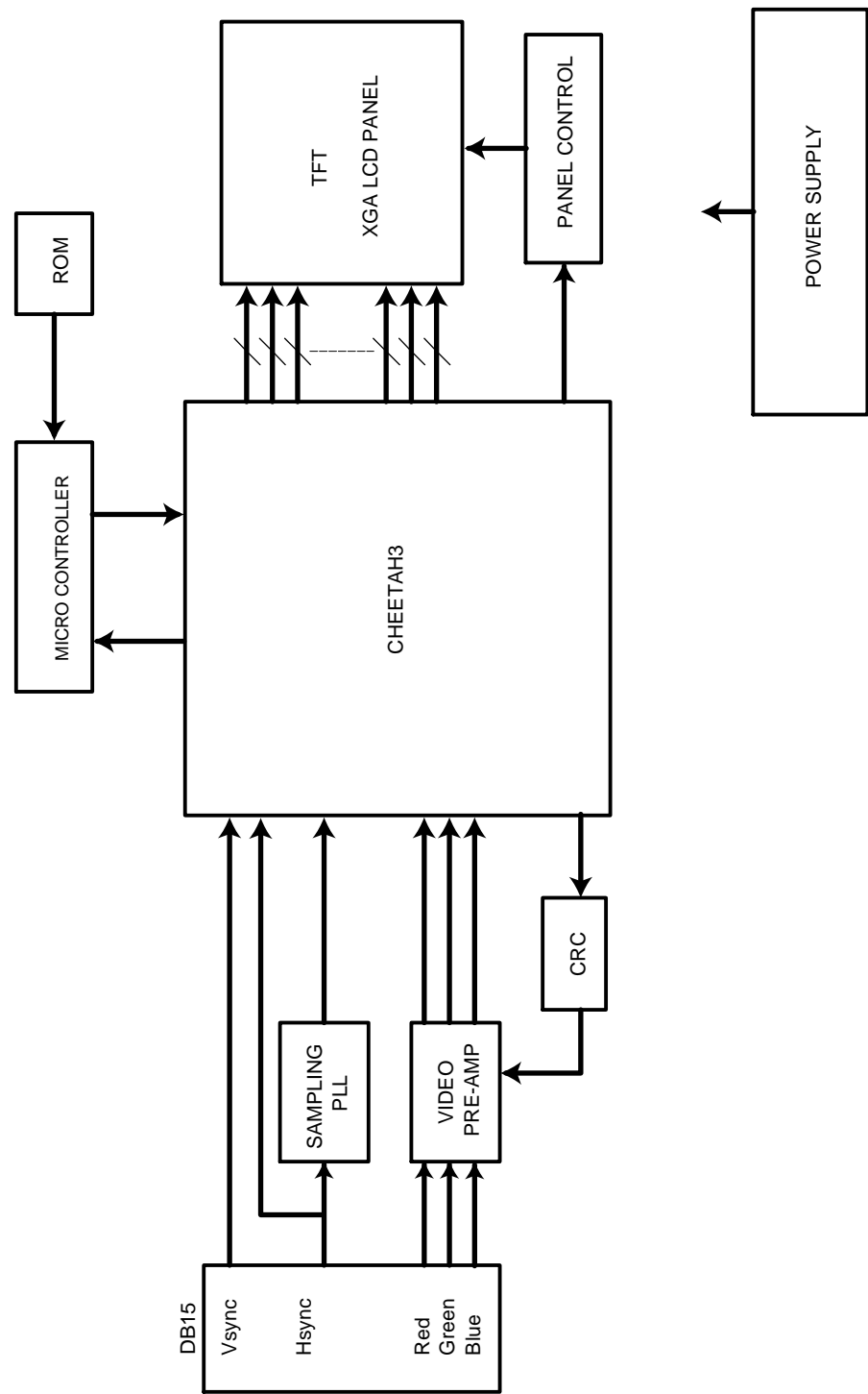
C It must be treated by Professional Technical Staff

3. MAINTENANCE

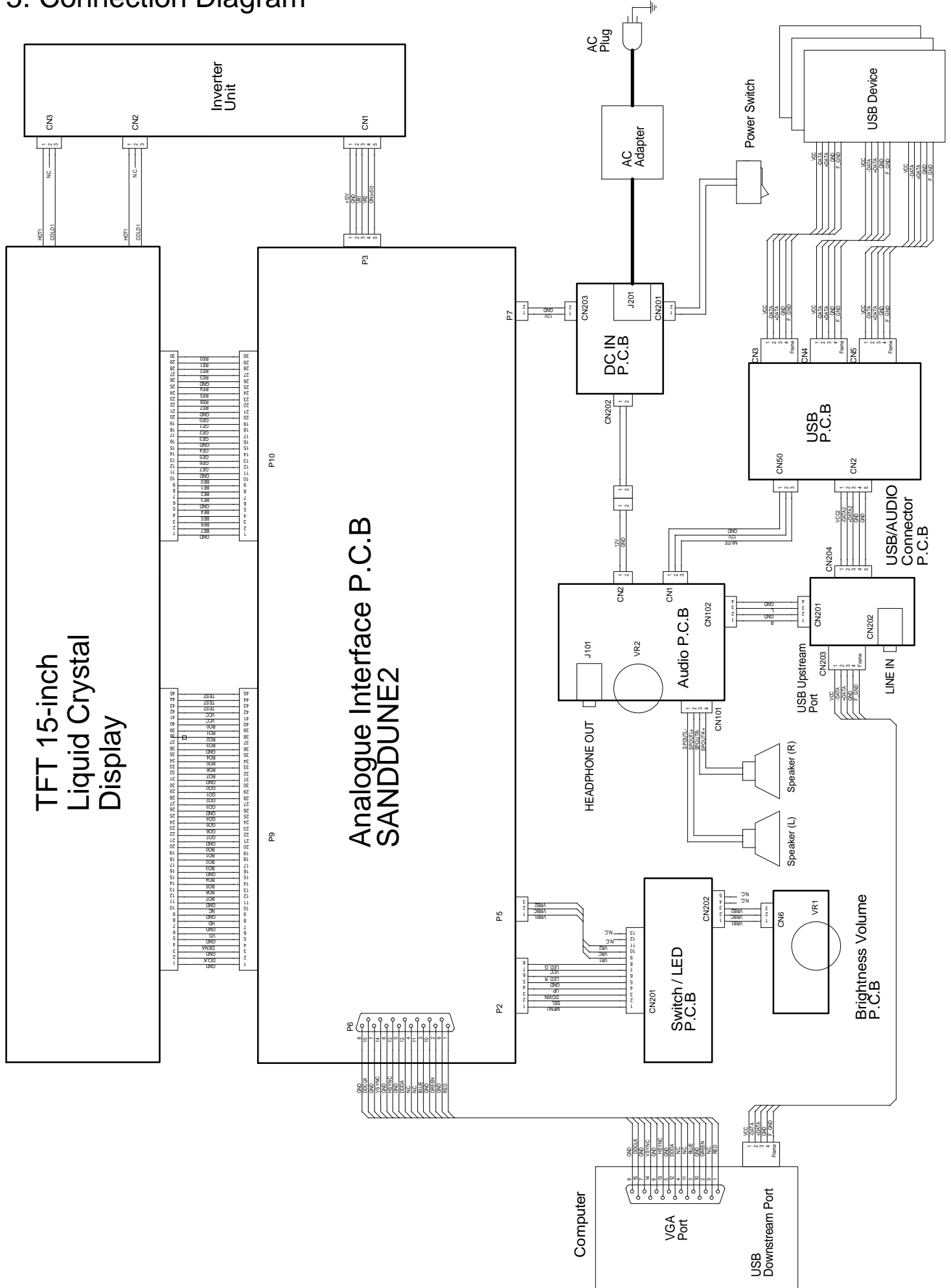
How to remove the major components

- (1) Stand Cover
 - 1.Place your fingers in a hollow of the Stand Cover. While pressing the Stand Cover hollow inside, and pull it your side.
- (2) Main unit and Stand
 - 1.Unscrew a Stand at the metal bracket to be secured with a Main unit (4-Screws)
 - 2.Disconnect the USB cable
- (3) Cabinet
 - 1.Unscrew a Rear Cabinet (6-Screws)
 - 2.While pressing the top portion of a Front Cabinet, pull the hooks your side
 - 3.Disconnect the lead wires to Switch/LED PCB
- (4) Switch/LED PCB and Brightness Volume PCB
 - 1.Unscrew the Switch/LED PCB and Brightness Volume (6-Screws)
 - 2.Disconnect the leads wire from Switch/LED PCB
 - 3.Disconnect the leads wire from Brightness Volume PCB
- (5) LCD Panel
 - 1.Unscrew a LCD Panel (4-Screws)
 - 2.Holding a LCD Panel up, then disconnect two lead wires from Inverter unit
 - 3.Disconnect two FPC connectors from the Main Logic PCB
- (6) Inverter Units
 - 1.Disconnect lead wires to the Main Logic PCB
 - 2.Unscrew the Inverter PCB (4-Screws)
- (7) Main Logic PCB
 - 1.Disconnect a RGB cable
 - 2.Unscrew the shield plate over the Main Logic PCB (5-Screws)
 - 3.Remove the Inverter connector, DC connector and Switch/LED connector
 - 4.Unscrew a metal bracket to be secured with RGB connector (2-Screws)
- (8) DC-IN PCB
 - 1.Unscrew the DC-IN PCB (2-Screws)
 - 2.Disconnect the connectors from a Power Switch, the DC connector and the Audio/USB connector
- (9) Power Switch
 - 1.While pressing the hook of a Power Switch, and pull it out
- (10) USB PCB in a Stand
 - 1.Unscrew a Stand Base (4-Screws)
 - 2.Remove a Stand Base
 - 3.Unscrew the USB PCB (3-Screws)
 - 4.Disconnect the lead wires from Audio/USB-IN PCB
 - 5.Disconnect the lead wires from AUDIO PCB
- (11) AD-IN PCB
 - 1.Unscrew the AD-IN PCB (2-Screws)
 - 2.Disconnect the lead wires from USB PCB
 - 3.Disconnect the lead wires from Audio/USB PCB
- (12) Audio PCB
 - 1.Unscrew the Audio PCB (3-Screws)
 - 2.Disconnect the lead wires from Audio/USB-IN PCB
 - 3.Disconnect the lead wires from USB PCB
 - 4.Disconnect the lead wires from Audio/USB-IN PCB
 - 5.Disconnect the lead wires from Speaker (Right/Left)

4. BLOCK DIAGRAM



5. Connection Diagram



6. TABLE OF SIGNAL NAME

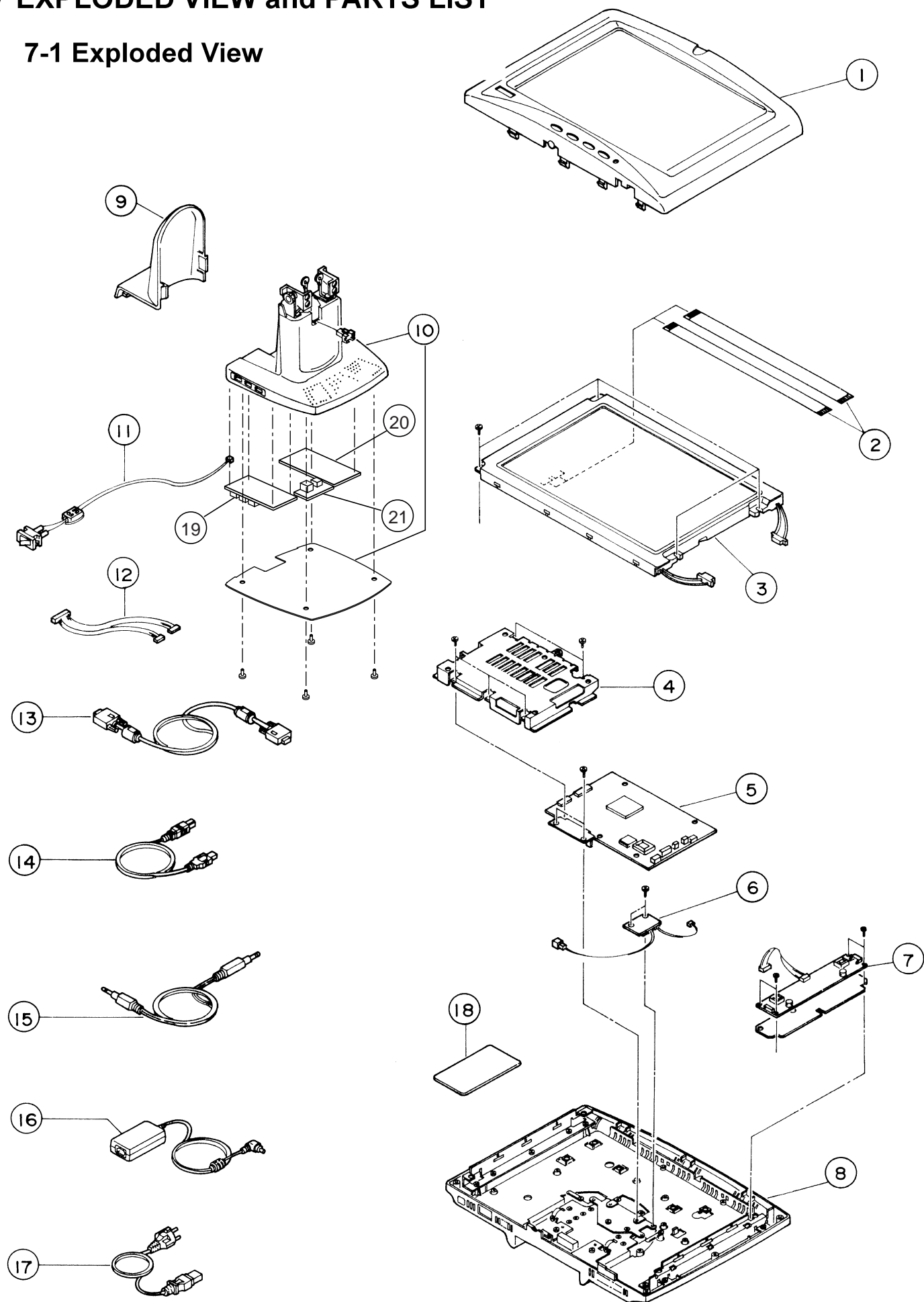
Symbol	Signal Name	Location	Notes
RED	RED/Analog Video Signal	P6-1	
GREEN	GREEN/Analog Video Signal	P6-2	
BLUE	BLUE/Analog Video Signal	P6-3	
DDDA(ID1)	DDC Data	P6-12	
HSYNC	Horizontal Synchronizing Signal	P6-13	
VSYNC	Vertical Synchronizing Signal	P6-14	
DDCK(ID3)	DDC Data Clock	P6-15	
BE7	BLUE Data[MSB]-Even	P10-2	POLARITY +
BE6	BLUE Data	P10-3	POLARITY +
BE5	BLUE Data	P10-4	POLARITY +
BE4	BLUE Data	P10-5	POLARITY +
BE3	BLUE Data	P10-7	POLARITY +
BE2	BLUE Data	P10-8	POLARITY +
BE1	BLUE Data	P10-9	POLARITY +
BE0(EVEN)	BLUE Data[LSB]-Even	P10-10	POLARITY +
GE7	GREEN Data[MSB]-Even	P10-12	POLARITY +
GE6	GREEN Data	P10-13	POLARITY +
GE5	GREEN Data	P10-14	POLARITY +
GE4	GREEN Data	P10-15	POLARITY +
GE3	GREEN Data	P10-17	POLARITY +
GE2	GREEN Data	P10-18	POLARITY +
GE1	GREEN Data	P10-19	POLARITY +
GE0(EVEN)	GREEN Data[LSB]-Even	P10-20	POLARITY +
RE7	RED Data[MSB]-Even	P10-22	POLARITY +
RE6	RED Data	P10-23	POLARITY +
RE5	RED Data	P10-24	POLARITY +
RE4	RED Data	P10-25	POLARITY +
RE3	RED Data	P10-27	POLARITY +
RE2	RED Data	P10-28	POLARITY +
RE1	RED Data	P10-29	POLARITY +
RE0(EVEN)	RED Data[LSB]-Even	P10-30	POLARITY +
DCLK	Data Clock	P9-2	
DENA	Data Enable	P9-4	POLARITY -
VD	Vertical Synchronizing Signal	P9-6	POLARITY +
HD	Horizontal Synchronizing Signal	P9-8	POLARITY +
BO7	BLUE Data[MSB]-Odd	P9-12	POLARITY +
BO6	BLUE Data	P9-13	POLARITY +
BO5	BLUE Data	P9-14	POLARITY +
BO4	BLUE Data	P9-15	POLARITY +
BO3	BLUE Data	P9-17	POLARITY +
BO2	BLUE Data	P9-18	POLARITY +
BO1	BLUE Data	P9-19	POLARITY +
BO0	BLUE Data[LSB]-Odd	P9-20	POLARITY +
GO7	GREEN Data[MSB]-Odd	P9-22	POLARITY +
GO6	GREEN Data	P9-23	POLARITY +
GO5	GREEN Data	P9-24	POLARITY +
GO4	GREEN Data	P9-25	POLARITY +
GO3	GREEN Data	P9-27	POLARITY +
GO2	GREEN Data	P9-28	POLARITY +
GO1	GREEN Data	P9-29	POLARITY +

Symbol	Signal Name	Location	Notes
GO0	GREEN Data[LSB]-Odd	P9-30	POLARITY +
RO7	RED Data[MSB]-Odd	P9-32	POLARITY +
RO6	RED Data	P9-33	POLARITY +
RO5	RED Data	P9-34	POLARITY +
RO4	RED Data	P9-35	POLARITY +
RO3	RED Data	P9-37	POLARITY +
RO2	RED Data	P9-38	POLARITY +
RO1	RED Data	P9-39	POLARITY +
RO0	RED Data[LSB]-Odd	P9-40	POLARITY +
TEST	Test Signal Out(*)	P9-43	
TEST	Test Signal Out(*)	P9-44	
TEST	Test Signal Out(*)	P9-45	
+12V	for Output Voltage (+)	P3-1	
VR1,2	for Contrast Volume	P3-3,4	
ON=5V	for Back-Light Control	P3-5	H: Light ON
VR1,2	Brightness Control	P5-1,3	
VRC	Brightness Control	P5-2	
MENU	Menu Key Input	P2-1	
SEL	Select Key Input	P2-2	
DOWN	Down Key Input	P2-3	
UP	Up Key Input	P2-4	
LED R	LED/RED, Control Signal	P2-6	
LED G	LED/GREEN, Control Signal	P2-8	

* : This terminal must be opened at System-side.

7 EXPLODED VIEW and PARTS LIST

7-1 Exploded View







CAUTION

Parts marked as  Are very important to secure safety.

In case of replacement, it is required to use designated parts for safety.

7-2 Parts List

REF NO.		PART No.	DESCRIPTION	Q'ty	NOTES
OUTER					
		(632 880 4986)	OUTER CARTON	1	
		(632 613 4436)	LABEL, BARCODE	1	
INDIVIDUAL					
		(632 834 2815)	STYRO-FOAM CUSHION, R	1	
		(632 834 2839)	STYRO-FOAM CUSHION, L	1	
		(632 834 2891)	PAD, ACCESSORY	1	
		(632 297 9901)	POLYETHYLENE BAG, 450X425X380	1	FOR MONITOR
		(632 607 4824)	POLYETHYLENE BAG, L180X270	1	FOR USER'S GUIDE
		(632 298 2376)	POLYETHYLENE BAG, 120X320	1	FOR RGB CABLE
		(632 607 4794)	POLYETHYLENE BAG, L120X230	2	FOR AC ADAPTER, AC CORD
		(632 840 4056)	PAD, CUSHION	1	
		(632 840 3639)	PAD	1	
ACCESSORY					
		(632 885 5698)	INSTRUCTION MANUAL, ENGLISH	1	
		(632 887 4460)	INSTRUCTION MANUAL, GERMANY	1	
CABINET1					
1		(632 888 6302)	CABINET ASS'Y, 150AT	1	
8		(632 888 6319)	BOTTOM LID ASS'Y, 150T	1	
18		(632 880 4993)	RATING PLATE	1	
CHASSIS					
4		(632 888 6333)	SHIELD CASE ASS'Y	1	
STAND					
10		(632 888 6388)	STAND ASS'Y	1	
9		(632 832 1957)	COVER, STAND	1	
CHASSIS ELC.					
3		(632 888 6326)	LIQUID CRYSTAL DIS. ASS'Y	1	
2		(632 825 8291)	FFC ASS'Y	1	
7		(632 888 6364)	DC-AC INVERTER ASS'Y	1	
16		(632 880 5488)	AC ADAPTER	1	
17		(632 873 0926)	AC CORD	1	
11		(632 850 6095)	POWER SWITCH ASS'Y	1	
12		(632 888 8689)	WIRE HARNESS ASS'Y	1	
13		(632 872 9494)	VGA CABLE, 1.5M	1	
14		(632 872 9715)	USB CABLE, 1.5M	1	
15		(632 883 7083)	AUDIO CABLE, 1.5M	1	
PC BOARD 1					
5		(632 888 6340)	PW BOARD ASS'Y, MAIN	1	
PC BOARD 4					
6		(632 888 6357)	PW BOARD ASS'Y, DC-IN	1	
PC BOARD 5					
20		(632 893 0456)	PW BOARD ASS'Y, AUDIO	1	
PC BOARD 6					
21		(632 893 0463)	PW BOARD ASS'Y, AUDIO/USB-IN	1	
PC BOARD 7					
19		(632 893 0470)	PW BOARD ASS'Y, USB	1	

APPENDIX

Version of Firmware

The Version of Firmware is displayed on screen.

Turn the Power Switch to 'OFF'. While pressing of the [SELECT] button, turn the Power Switch to 'ON'.